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AUTHOR Petry, John R.; Kenney, Gordon E.
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ABSTRACT

This paper examines the impact on higher education of funding shortfalls that are due to significant reductions of college budgets by state legislatures and that result in trimming of services and laying off of employees. First, an overview of national trends and statistics describes retrenchment as a key institutional response. A look at some shortfalls in states of the Southern Regional Educational Board follows. Next, an in-depth examination of the effect of shortfalls in Tennessee is offered. This analysis details recent budget figures and changes and describes some of the strategies being considered to respond to the crisis. Those strategies include freezing salary levels, restricting benefits programs for state employees (including tuition benefits at state institutions), hiring freezes, purchasing freezes, travel limits for faculty, and delay of essential construction projects. The next section speculates that such measures might result, over time, in scaling back of program offerings, a redefinition of degree requirements, elimination of programs with low productivity, and the coalescing of small departments. Also explored are the possible effects of shortfalls on professional and nonprofessional staffing, on creativity, and on research. In addition the paper raises a number of questions including: Whether and when funds will be restored; Whether there will be an award for efficiency in managing an institution successfully through a crisis; Whether there will be a monitoring that determines no real conservator among the many managers; and What models will be used by which to establish standards. A conclusion offers six recommendations. (Contains 26 references.) (JB)

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THE IMPACT ON HIGHER EDUCATION

Part of a Symposium:

FUNDING SHORTFALLS AND THEIR IMPACT

ON POLICY MAKING IN THE 1990'S

John R. Petry, Memphis State University

Gordon E. Kenney, Memphis State University

Paper Presented at the Annual Meeting

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National Effects of Shortfalls on Higher Education

The effects of shortfalls on the nation are extensive and far-reaching. Numerous states have slashed college budgets; namely, by trimming services and laying off employees, the latter being the area in which the most significant swings can be made in a short period (1).

According to the Education Commission of the States, more than half of the states have severe or fairly serious budget shortfalls. States with the most severe problems are California, Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, Michigan, Mississippi, New Hampshire, New Jersey, Pennsylvania, Rhode Island, Vermont, and Virginia. Fairly serious are Alabama, Arizona, Florida, Georgia, Indiana, Iowa, Minnesota, Missouri, New York, North Carolina, Ohio, Oregon, Tennessee, and Texas. States with manageable situations are Colorado, Hawaii, Illnois, Kansas, Kentucky, Nevada, South Carolina, and West Virginia. States with little or no crisis are Alaska, Arkansas, Idaho, Louisiana, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Utah, Washington, Wisconsin, and Wyoming (2).

In Florida, the governor ordered a hiring freeze and travel limits, which students protested, projecting that schools may lose $362 million (3). In Carson City, University of Nevada officials were told to develop plans for budget-cutting, possibly to amount to 17% (4). In Illinois, the General Assembly is forcing universities to consider cutbacks, weighing hiring freezes, fewer books, and less maintenance (5). In Albany, it was announced that the State University of New York will save $6.4 million if it reduces faculty sabbatical leaves to 3% from 5.8% of an earlier level (6).

In Iowa, where there is a $300 million deficit, plans include cutting drivers license stations from 141 to 19 to save $9 million (7). In Maryland, approved cuts totaled $446.2 million by laying off 1,776 state workers; in addition, 416 vacancies

are to be cut. In the Virgin Islands there is to be a cut of $5.2 million in vacant and new positions and in government and travel costs. Cities are also cutting costs, as in the case of Pittsburgh where there is a $35 million deficit, and where 83 city workers were cut, exempting fire fighters and paramedics.

Three organizations - the National Education Association (NEA), American Association of University Professors (AAUP), and American Federation of Teachers (AFT) - have united to combat further erosion of higher education funding at the federal level (8). NEA President Keith Geiger stated that "it is economic suicide for the United States to reduce investment in higher education." AAUP President Barbara Bergmann calls the cutbacks "a direct threat to quality and equal access in education." Their conclusions are based on their contention that states lack the ability to adequately finance quality public education. They advocate a fair and progressive federal income tax to cope with the long-term problems relating to the shortfall. AFT President Albert Shanker urges the stoppage of "steady decline in the quality of higher education" and a remedy for assuring equality of educational opportunity.

In Campus Trends, 1991, recently released by the American Council on Education, several statements were made relating to the shortfall (9):

1. Almost half of the nation's colleges and universities started 1991-92 with mid-year cuts in their 1990-91 operating budgets.
2. One-third of all postsecondary institutions had operating budgets during the past fiscal year that either decreased or failed to keep up with inflation.
3. Two-thirds of the colleges and universities reporting tight budgets stated that they had delayed expenditures for buildings and equipment.
4. Public colleges are frequently reducing the number of classes, and sections offered are increasing in size.

5. Half of the public institutions that experienced mid-year budget cuts in 1990-91 have also raised tuition and fees.

In Massachusetts, there has been a prolonged state budget crisis resulting in animosity toward government employees, including professors (10). Since 1988, state appropriations have been cut 22%, or $36 million, at the University of Massachusetts, resulting in lowered morale, an exodus of top personnel, and a decline in first-year student applications. Despite the fact that the state ranks 50th in funds spent per student, further cuts are anticipated. There have been no raises for three years, and the number of faculty has been reduced by 285. Furloughing in 1991 meant that all professors were forced to forego two weeks of pay while still instructing. This has led to resignations of faculty desiring to go elsewhere so that they can be paid more, receive raises, have some hope for financial underpinning, and be assured of positive working conditions that seem to be missing in Amherst.

Retrenchment is the key descriptor for describing efforts to adjust to the budget shortfalls. A model has been developed to provide a hierarchical, decision-making approach, which, for higher education, targets individual program budgets for graduated reduction and evaluates a group of solution alternatives for their feasibility as defined by the criterion constraints of the solution environment (11). Liberal arts colleges, facing situations similar to public institutions, have had to find ways to increase income and to practice retrenchment through consolidating jobs, cutting academic programs, reducing financial aid, and delaying construction, but fear that such practices might have an effect on their character, resulting in less personal contact, fewer small classes, and less opportunity for individual studies and innovative programs (12).

Shortfalls in Regional States

Two reports of the Southern Regional Educational Board (SREB) give a picture of the financial status of its member states in early 1991 and in the third quarter of 1991. The former (13) stated that nine states in February had revenue shortfalls and that most had cut budgets by 5-8%. Shortfalls ranged from $82 million in South Carolina in 1990-91 to nearly $2 billion in Virginia for the 1990-92 biennium. (13). Eight SREB states took mid-year cuts that directly affected higher education. Mississippi was the lone holdout until only recently. Budget cutting in one state was spared by using reserves; in six SREB states, revenues were above original projections. For the future some estimates were increased, some were decreased, but more were increasing over the 1990-91 reduced base.

The latter report (14) stated that revenue shortfalls are continuing, that some SREB states are scaling back on the size of government, that budget-cutting measures have begun in some states, and that some states will reduce expenditures in the 1991-92 year. In some states, universities will receive general funds that are lower than reduced 1991 budgets. However, two states will receive more money for universities because of higher taxes in one and the shifting of funds in another.

Shortfall in Tennessee

In a memo to presidents and directors of Tennessee Board of Regents institutions, the chancellor, Otis L. Floyd, initiated an expenditure freeze on salaries, employment of full-time positions, and out-of-state travel and equipment from unrestricted funds. Further, all capital projects were deleted from the 1991-92 budgets, and capital maintenance allocations were reduced (15).

In an additional memo, he added 12 other areas in which reductions were to be made by each institution: library acquisitions, student fees for athletics,

operating fund expenditures for faculty and staff development, activities (or reduction), grants or contracts dependent upon the availability of unrestricted matching or support funds, normal or preventive campus maintenance, summer school, and low enrollment courses (eliminated are those with under 15 enrolled). He ordered an increase in the size of remedial and developmental sections, faculty credit hour teaching load, and section sizes. He also requested teaching responsibilities for qualified administrators. He included a category for other types of savings as deemed necessary (16).

These changes in budgeting were conveyed to deans, directors, and vice-presidents by the presidents of Tennessee public institutions in memos. Also shared were the number of dollars by line item that the universities and colleges would forego as a further reduction of 13% of the FY '92 budget. A freeze on further out-of-state travel was removed, then curtailed. (17) The freeze on equipment purchasing was lifted for a few weeks before the expiration of the fiscal year; however, no equipment purchase will be allowed in FY '92 for any area. Unfilled positions were allowed to be filled after July 5, 1991; unspoken for positions (deleted or frozen) were not funded for FY '92 and, therefore, were lost after the freeze was lifted. (17).

Legislators are faced with adequately funding a set of nine universities in the state, 14 two-year community colleges and state technical institutes, 30 area vocational technical schools, two medical schools, one veterinary school, and one space institute. Enrollment for these institutions jumped 6% this fall, one institution experiencing a 62% gain, but at the same time, state funding was cut 3%, in addition to the 8% cut last year from appropriations (18). Arless Roaden, Executive Director, Tennessee Higher Education Commission, stated that the system is "confronted with enormous challenges of maintaining academic

freedom and equality . . . We're faced with lost momentum and unrealized dreams." (18)

Floyd told college presidents and the Shelby County (TN) legislative delegation that state colleges might soon have to endure another round of budget cuts because of lagging tax collections (19). Earlier, legislators rejected the governor's proposed creation of a state income tax to raise funds for education. Various presidents of the colleges commented about the threat to quality of instruction if further cuts are made, especially in the face of rising enrollments, which many do not want to limit.

One reason for the shortfall is the benefit programs for state employees and teachers; the former can take one course each term at a state school without cost, while the latter can send their children to state colleges at a 25% discount rate for tuition (21). Legislators appropriated $100,000 for the full-time state employee program, but costs were $897,000 in 1990-91. For the teachers' children they set aside $302,000, but costs were over one million dollars for 1990-91. Budgeting problems may force enrollment in them to be capped or even abandoned.

The Effect on an Institution of Higher Education

An example of an institution affected by the shortfall is Memphis State University, whose faculty and staff received no increases in salary for FY '92. That is not necessarily a negative status if there is no inflation in the United States. Learning to live with zero inflation would be new to many U.S. citizens but not to those who endured the Great Depression. Indeed, to those people on fixed incomes the news would be welcome in that inflation diminishes their purchasing power significantly and produces fear of an inability to maintain a desired minimum standard of living.

Most departments are affected by the cutbacks, meaning that there are restrictions on hiring professors and part-time faculty (21), more students per class, fewer laboratory sections (which leads to the use of more graduate assistants). Some departments have lost 10% of their budgets, leading to larger classes in areas that should have lower limits to facilitate adequate learning, such as foreign languages.

A freeze on new equipment purchases has been ordered and is in effect (22). This action was part of a budget reduction issued by the governing board (Tennessee Board of Regents) for all of its institutions, which resulted in Memphis State University reducing its needs by $7.7. Equipment was included. This forces students to work with one another or move to a better equipped institution. Some departments are equipment-intensive, so the cutback will negatively effect not only the present education of students but also their future research and experiments and that of the faculty.

A lack of funds is keeping Memphis State University from building a new library, sorely needed because of the anachronistic construction of the present edifices and because of the necessity to house ever-growing numbers of volumes related to the research needs of faculty and students. The Tennessee Board of Regents (23) has vacillated on the library's ranking, rating it both higher and lower based on the enrollments of others institutions in the system. Its large cost has also affected attitudes toward its construction - three smaller buildings could be built elsewhere in the state for its price. Politics also plays a part in its approval, especially in relation to the influence of The University of Tennessee with its numerous campuses, all in need of either new or renovated buildings.

Scholarship programs at state schools have not been adversely affected by budget cuts (24), but they have been at private schools (25). Scholarships attract students to colleges and universities and are essential to their maintaining

enrollment, in most instances. This type of cut was not included in the university's submission of reduction; indeed, it would have been folly to have included it because of the essentiality of scholarship funds for both lower socioeconomic and marginally financed students. When cuts are made in budgets, they most often do not interfere with an individual's ability to continue in school. Exceptions relate to students attending private schools that mostly provide health-related education for the state. Recent actions (25) by the Tennessee Higher Education Commission confirmed an early action to deny funds to this group of individuals because no funds had been approved by the legislature for the governor's tax reform proposals.

A major concern of faculty has been the limitations on travel to out-of-state conferences, which are deemed essential to faculty growth and, therefore, student enrichment (26). The most recent regulations put a limitation of one conference for each faculty member for the academic year, granting travel funds only if the person is delivering a paper or conducting a training session. Being an officer of the sponsoring organization, or being a committee chair or member, does not qualify a person for approval. Participation funded by external sources is exempted. What is in force at present is better than the total freeze of a few months ago. Even the present policy can be seen as detrimental to faculty who have completed research and have limited opportunity about where to present their findings and conclusions.

Duress and Stress in Academe: Scaleback of Program Offerings

It is within the realm of possibility that shortfalls, carried over a period of years, could produce a scaleback of program offerings. A redefinition of degree requirements is a conceivable reality in that there could be a reduction of duplicate courses across departmental lines, especially at the graduate level,

greater concentration on the missions of departments, and a larger core of courses with more students enrolling in fewer classes. This implies the use of fewer facilities and is a negative aspect of the reason for the building programs of universities; larger classes might mean a necessity to redesign interiors of existing buildings.

Programs with low productivity could be another type of casualty. Monitoring of these costly course offerings will reveal which programs are to be terminated because of low numbers of graduates. However, relegating them to supportive roles in supplying minor fields of study might be ample justification for their retention. Cancelling classes with under 15 students can affect degree programs and lengthen the time a student stays in school.

Another result of a shortfall could be the coalescing of small departments, which are often tenuously maintained while trying to develop respectability and continuance. Their utility is questioned when considering accountability. Costs are escalated because of the need for a chairperson, plus accompanying line item needs. In combining departments, care must be taken to guard the tenure status of professors, granting them the opportunity to participate in the deliberations both to dissolve one department and join another.

Professional and Nonprofessional Staffing: Freeze or Finality

Shortfalls might have their strongest effects on personnel because of the significant percentage of budget dollars allocated to salaries and benefits. The ease of leveling deficits through faculty/staff reductions tempts budget makers to take this route rather than others. Attrition and failure to fill vacant positions are more humane and considerate methods to attain budget stability and are external testimonies to the attitudes of higher education institutions toward long-term employees, even though such actions take longer to achieve balanced budgets.

Early retirements accompanied by lump sums or arrived at through combining years served with an age requirement are methods of dealing with deficits. Some faculty opt for the packages offered, but others are content to wait out the situation. Continued depression of funding with no raises is an incentive for others to decide to retire because they see nothing added to their pensions and decide that they can live on what they will be recompensed.

Differentiated staffing can be employed as a means of retaining existing personnel, in preference to hiring others. Institutions often have redevelopment programs for faculty and staff, building them on the interest and training of the persons facing possible lay-off. Their adding additional, valuable skills that are useful in teaching and service counteracts the necessity to replace them. Retraining is most valuable when it allows retention of personnel who cannot be replaced during a freeze in hiring. It also invigorates the recipient and adds the factors of increased morale and productivity to the institution's work force. It remains a concern with faculty that they be returned to their responsibilities upon the lifting of the freeze.

Educational Innovation: Creativity and Research

A drying up of financial support has a negative effect on the process of innovation, which is based on the creativity of some faculty members and the research efforts that they and others mount. It is correct to say that not all faculty will be affected, but, if those who have the creative abilities and those who generate research ideas and funds are inhibited, the institution's role as a cutting edge for society will be diminished, perhaps irreparably. These types of people need room to create and develop, to think and experiment. When they are shifted to teaching as a primary task, they will share with students their findings, discoveries, and products, but they will neglect their primary interests. Heavy

teaching loads will stifle their incentives because they will be engaged in establishing grades and keeping records rather than in hypothesizing, observing, and discovering.

Striving for more student credit hours for each professor might indicate a better managed budget but does not account for all that a university should produce. Reducing research to accommodate teaching needs produces a negative effect on attaining outside funds because donors/agencies want to finance proven researchers who are capable of overseeing grants and who have adequate time to to guarantee successful protocols. The university must not neglect its mission to contribute to the discovery of new knowledge. Administrators should resist the temptation to forego much of the research efforts in favor of the assumption of teaching responsibilities.

Restoration of Losses: Effectiveness or Efficiency in Budget Decisions

Almost before an institution is involved in budget cutting, its personnel wonder whether there will be a restoration of losses, and, if so, how soon funds will be restored and to what level. Part of the questioning relates to the inquiry about the restoration of salaries:. Will we make up the losses that we have experienced because of the shortfall?

Questions relate to the effects of effectiveness: Will there be an award for efficiency in managing an institution successfully throughout the crisis? or Will there be a monitoring that determines no real conservator among the many managers? What model will be used by which to establish standards? Will persisting until the end of the crisis be enough?

On the other hand, Will demonstrated efficiency mean that saved or protected funds will be given to other institutions that have lacked funds or have not managed so well as others? Stranger results have taken place after presidents

have done well - their savings have been given to others, not returned to their own budgets. To preserve the academic impact of their institutions, they will, in all likelihood, labor without much thought of reward, being engrossed with running an efficient ship. But efficiency is not always sought if rewards are not forthcoming, being known beforehand.

One thought might trouble them, however: Are we to do more without the restoration of funding levels? Maintaining minimum levels is certainly their intention, but adding more load to the academic programs without increased financial support will have to be resisted lest morale decrease to the point that even students notice the negative attitudes of faculty. Answers would be to seek general funding, endowment dollars, and monies for specified/designated/needed programs essential to quality programming and to the issuance of quality products, which in this case are students who are both educated and trained for the world of intellectual endeavor and work, and who are capable of meeting the challenges of changing technology and the world's political, social, religious, and economic values.

Conclusions

1. The shortfall will continue for some time in conjunction with the economic downturn. The failure to turn the trade balance in favor of the United States, which means selling more of our goods to foreign nations, is one aspect of a needed recovery. Attention to roads, subsidies for businesses, including food supplies, support of pork barrel projects, and prevalence of wasteful spending, also influence the present economic status.

2. It is possible that changes made in previous years will be sustained for an indefinite period in order to calculate their overall effect on the academic programs of institutions; that is, there is some thought that coalescing might be

permanently beneficial to departments and colleges and that eliminating duplication of effort is beneficial to budgeting in that it allows for spreading funds to other needful areas that might have been underfunded previously.

3. The notion that any institution can offer anything its faculty or publics want may be shelved permanently as a result of this crisis. Pressures on academic personnel can be reduced by holding firm to a commitment to sensible management of allocated funds. Stretching dollars to accommodate any newly suggested course offerings and programs will be labeled ill-considered. All must know that human and physical resources are limited and can be stressed and stretched for only limited amounts of time.

4. It will not be business as usual for institutions that have enjoyed the largesse of economic growth. Cost conscious policy will be maintained as the nation adjusts to a peacetime economy. Sensible action on the part of Congress would be to lower the deficit, which among other things means fewer federal jobs that are sustained by tax money supplied by citizens. There is a tendency not to reduce national spending but to continue spending at accelerating rates on government, which does not produce anything for sale, but mainly provide services. Only the U.S. Post Office is into profit-making, but is most often a failure at this attempt.

5. It is possible that business will both support institutions on a larger base, that is, contribute more funds to slashed budgets and to favored programs, and also go elsewhere, namely, to their own firms or to satellite organizations, for their services and research because of both curtailed activity in the universities and the costs of doing business with the universities. Everyone is cost conscious during a recession, and business will seek the better price for services rendered.

6. It is conceivable that state systems of higher education institutions will establish firmer controls on fiscal policies of its members, centralizing

accounting through on-line communication modes, monitoring either daily or weekly expenditures and income, checking frequently on policy adherence, and will coordinate academic offerings among institutions, disallowing duplicated degrees (especially when proximity is evident), promoting unique educational opportunities only for the flagship institutions, and distributing centers of excellence in order for all senior institutions to attain recognition. It is a bad time financially, but some good can be achieved during its span of existence.

References

1. Jones, Richard. (September 1991). 29 States slash college budgets. U. The National College Newspaper, V: 17.
2. Jennings, Michael. (Fall 1991). Perestroika, Kentucky style. Agenda, 1 (2): 32-5.
3. (September 25, 1991). Across the USA: News from every state: Florida. USA Today, 8A.
4. (August 27, 1991). Across the USA: News from every state: Nevada. USA Today, 7A.
5. (July 26, 1991). Across the USA: News from every state: Illinois. USA Today, 8A.
6. (October 10, 1991). Across the USA: News from every state: New York. USA Today, 9A.
7. (October 3, 1991). Across the USA: News from every state: Iowa. USA Today, 9A.
8. Robbins, Rebecca L., editor. (July 5, 1991). NEA in joint action against higher education crunch. Higher Education Almanac, VIII (11): 1.
9. Robbins, Rebecca L. editor. (August 27, 1991). Looking ahead: Academic life in hard times. Higher Education Almanac, VIII (13): 1.

10. Butterfield, Fox. (May 26, 1991). University of Massachusetts is losing money and morale. The New York Times NATIONAL, 18.

11. Wholeben, Brent A. (August 1985). Retrenchment in education: Hierarchical decision models for instructional program termination, district consolidations and school courses. Resources in Education, ED 254 922, part 2, p. 1210-1211.

12. Nicklin, Julie L. (January 30, 1991). Liberal arts colleges face up to cost-saving measure but fear their character may be affected by cuts. Chronicle of Higher Education, 37 (20): 256.

13. Gaines, Gale F. (February 1991). Financial outlook for 1991-92. Southern Region Education Board Legislature Report, 1991. Report No. 1, 1.

14. Gaines, Gale F. (September 1991). Final legislative and budget actions. Southern Region Education Board Legislature Report, 1991. Report No. 4, 1.

15. Floyd, Otis L. (April 26, 1991). Memorandum Tennessee Board of Regent, 1-2.

16. Floyd, Otis L. (April 29, 1991). Request for institutional plans and impact analyses addressing projected 1991-92 funding. Memorandum, Tennessee Board of Regents, 1-5.

17. Rawlins, V. Lane. (June 17, 1991). Budget freeze relief. Memorandum, Memphis State University, 1.

18. (October 13, 1991). Dreams in a vise. The Commercial Appeal, B8.

19. Waters, David (October 12, 1991). Colleges "at edge," legislators are warned. The Commercial Appeal, B1.

20. Locker, Richard. (October 12, 1991). Special deals on tuition too costly, officials say. The Commercial Appeal, B1.

21. (August 1991). Help for Ned? Budget plan: cut taxes, shift priorities. The Commercial Appeal, B10.

22. Rawlins, V. Lane. (July 8, 1991). FY 1991-92. Budget-lapsed salaries. Memorandum, Memphis State University, 1.

23. Waters, David. (September 8, 1991). Lake of funds keeps MSU's new library in blueprint stage. The Commercial Appeal. A1, A5.

24. Luige, Gretchen. (September 13, 1991). Scholarship programs unaffected by state-wide cuts. The Daily Helmsman, 1.

25. Waters, David. (August 4, 1991). Student ambitions hit wall. The Commercial Appeal, B1.

26. Craig, Angie. (September 5, 1991). Travel cutbacks raise questions with MSU staff. The Daily Helmsman, 1.